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CAUSE, PREVENTION, AND TREATMENT OF BLOAT

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Bloating of cattle and sheep pastured on alfalfa and Ladino clover has hampered the use of these valuable feeds.

Experiments conducted for five years by the Animal Husbandry Division of the College of Agriculture, Davis, have shown that proper management will reduce the occurrence of bloat. Although the experiments were with dairy cows, the results will presumably hold good for other cattle and for sheep.

This paper is intended to aid the livestock man in reducing bloat among cattle and sheep pastured on legumes such as alfalfa and Ladino clover. For further information on specific problems connected with bloat write to Division of Animal Husbandry, College of Agriculture, Davis, California.

GENERAL INFORMATION CONCERNING BLOAT

Are all cows subject to bloat when on legume pastures?

Yes; in one series of experiments, 14 of 17 cows bloated. The 3 that did not had recently freshened and were eating very little. Some, however, are more susceptible than others. A few "chronic bloaters" will suffer on any feed; they are abnormal, probably because of a defective nervous system or some digestive disturbance. The peculiarity may or may not be permanent. The observations given here apply only to normal animals.

What causes bloat?

Bloat is caused by the animal's having insufficient coarse feed in the rumen. Coarse feeds scratch the lining of the first stomach; this stimulates belching, the only means by which the cow can expel the gas constantly formed.

Is more gas formed from legume pasture than from other feeds?

No; actual measurements show that the amount of gas formed in the rumen on hay and grain is just as great as the amount produced on green legumes. The problem is to get rid of the gas formed.

Then why do cows bloat on alfalfa and Ladino-clover pasture, but seldom on Sudan or other grasses?

The leaves of most grasses, especially Sudan, have sharp, irritating surfaces; they stimulate belching. Legume leaves, on the other hand, are smooth. Since they are often eaten when immature, and since the animals consume the soft, succulent tops, the rumen is not stimulated enough to cause belching. In addition, the legumes, through the nature of their growth, may be eaten more hastily than the grasses; hence the gas forms faster.

Does frost, dew, or the direction of the wind have any influence on bloat?

Possibly; but the kind of feed and the stage of its growth are more important. In the experimental animals, bloat occurred under a wide range of weather conditions.

Under what conditions is bloat most common?

Bloat occurs most often on a thick stand of immature alfalfa or Ladino clover. Cows that have had all the hay they want for at least 2 days before being turned out to pasture are less liable to bloat. Where the legume pasture contains many weeds or grasses, bloating does not usually occur until these coarser materials are pretty well cleaned up. Often, cows will prefer weeds to young, succulent alfalfa. Even if no bloat occurs the first day, the pasture may still be unsafe.

RECOMMENDATIONS FOR PREVENTION OR CONTROL OF BLOAT

Mixtures of grasses with legumes cause much less bloat than legumes alone.

Extension Circular 125 recommends mixtures of grasses with legumes suitable for various parts of the state.[4] Pasture mixtures as preventives of bloat are effective only when the proper pro-

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[4] Jones, Burle J., and J. B. Brown. Irrigated pastures in California. California Agr. Ext. Cir. 125:1-48. 1942.
This publication as well as others issued by the College of Agriculture is available in the office of the local county farm advisor.

portion of grasses and legumes is maintained by good cultural and pasture-management practices. Advice on pastures suited to local conditions may be obtained from the county farm advisor.

Unless supplemented, pure stands of alfalfa should not be pastured until they have reached the early bloom stage.

Mature legumes, being more stemmy and coarse, stimulate belching, by which the cow rids herself of the gas as it forms. Because legumes vary in coarseness, it is hard to make specific suggestions. A fine, leafy growth is the most dangerous. Unless one uses a system of rotational pasturing, utilizing small fields, it may not be economical to pasture mature alfalfa.

Supplemental feeding of Sudan hay in the corral at night will prevent most cases of bloat.

In experiments, cows pastured on immature alfalfa, without hay, bloated in large numbers. If, however, the cows were fed Sudan hay at night in the corral, and placed on the same immature pasture the next day, none bloated. In the fall of 1942, while pasturing immature alfalfa without hay supplement, there were 101 cases. On two occasions the bloat developed faster than facilities would accommodate; on one day, 10 of 16 cows bloated after being on pasture for less than 3 hours. Feeding of Sudan hay completely prevented the trouble in this pasture. Alfalfa hay appeared less beneficial, though still of distinct value.

Feeding Sudan hay in the pasture will also control bloat.

In the experiments, cows did not bloat when they received 8 to 10 pounds of Sudan hay while pasturing on thick, immature alfalfa. They should have a full feed of hay overnight before the first day of pasturing. Possibly a smaller amount of Sudan would suffice; but 8 to 10 pounds is what was actually used. Alfalfa hay, being less irritating, may not be quite so effective.

Sudan pasture at night will largely eliminate bloat on legume pasture the next day.

None of the experimental cows bloated on alfalfa pasture after having been on Sudan pasture for two previous nights.

Few livestock men are using Sudan hay and pasture. Since this feed is so valuable in controlling bloat and also because it produces a large amount of good pasture, the program of crop rotation might well include Sudan.

RECOMMENDATIONS FOR TREATING BLOAT

Prompt action is essential.

Since death from bloat may occur suddenly, prompt action is necessary. Inexperienced persons, especially, should call a veterinarian. If several animals are bloated, all should be taken from pasture and, if possible, given access to Sudan hay or straw. In this way, other animals may be prevented from bloating, and those that are slightly bloated may recover without treatment. Some animals may bloat even though given Sudan; but experience indicates that the attack will be less severe if hay is fed.

Types of treatment.

Bloat may be treated with drugs, such as turpentine, aromatic spirits of ammonia, formalin, fluid extract of ginger, and alcohol; or with a mouth gag, a stomach tube, and, as a last resort, trocar and cannula or a knife.

Preferred method of treatment.

Almost all bloat cases can be treated safely and satisfactorily with 1 to 2 ounces of any of the drugs mentioned above. Turpentine is probably the cheapest, most readily available, and least toxic; it can be administered with a dose syringe without dilution. All these drugs tend to prevent more gas from forming and to re-establish the belching mechanism. In stubborn cases a mouth gag can be used along with the turpentine. A simple but effective gag can be made from a block of wood 12 inches long and 4 to 5 inches square. The sharp corners should be rounded, and a hole bored in each end so that a rope can be inserted. The gag is held in place by the rope in the same manner as a bit. One may hasten the belching by vigorous massage of the left flank with the fist.

Use of the stomach tube.

When used by a veterinarian, the stomach tube is excellent for relieving severe bloat; it allows the gas to escape; irritates the throat, and thus stimulates belching; and allows large quantities of hot water and drugs to pass directly into the rumen. In inexperienced hands the tube is potentially dangerous because it may be misdirected into the lungs.

Use of the trocar and cannula.

The trocar and cannula should never be used unless other methods have failed and the animal is down and evidently dying. Before using the trocar one should carefully prepare the site of operation; a cow is in just as much danger of death from chronic peritonitis, which often follows the injudicious use of the instrument, as from bloat. When not in use the trocar and knife should be kept sharp, clean, and immersed in a bottle of alcohol or other suitable disinfectant. Insert the trocar in the center of the triangular area just forward of the point of the left hip bone. If possible, clip the hair over the place to be stuck; and always thoroughly disinfect the area with tincture of iodine. Cut through the skin down to the soft underlying tissue with a disinfected knife; then insert the trocar and cannula. The trocar should always be thrust into the cannula before the latter is removed. When these precautions are taken, there are fewer deaths from chronic peritonitis. If no other means are available, and if a cow is down, one is justified in taking the chance of peritonitis by opening the rumen with a sharp pocket knife. If the emergency permits, the knife blade should first be cleaned, and dipped in alcohol.

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